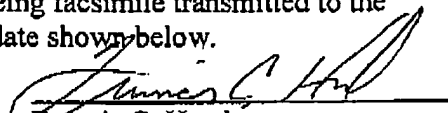


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Francis C. Hand

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICHARD PHILLIPS and IRA L. FRIEDMAN

Appeal No. 2008-2792
Application 10/724,248
Technology Center 1700

Decided: September 25, 2008

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR REHEARING

Sir:

This is a Request for Rehearing of the Decision on Appeal dated September 25, 2008 pursuant to 37 CFR 41.52.

I. It is respectfully submitted that the Decision mis-states the issue on Appeal.

2. It is respectfully submitted that FF (2) is in error.

In the Final Rejection and in the Examiner's Answer, claims 1-10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Allroth et al. in view of Ozaki et al with the Examiner stating that Allroth et al. discloses the invention substantially as claimed. In particular, the Examiner opined that Allroth et al. discloses a process comprising:

mixing a ferrous metal powder with a lubricant to form a mixture;
compacting the mixture at high pressure by HVVC.; and
heating the compacted mixture at a temperature of up to 2552°F. to liquid phase sinter the compact to form a sintered metal body (col. 4, lines 57-60).

Further, the Examiner stated that Allroth et al. further discloses that the lubricant is liquid during the compacting step (col. 5, lineal-20) and that the lubricant includes graphite.

Thus, the issue presented is whether or not Allroth discloses the invention substantially as claimed. The issue presented is **not** "did Appellants identify reversible error in the Examiner's rejection of claims 1-10 under § 103", as stated in the Decision at page 4.

The Decision further states, in part, "The issue turns on whether Allroth taken alone or in combination with Ozaki, discloses compressing the mixture at a pressure sufficient to liquefy and uniformly distribute the lubricant within the compressed mixture *and* liquid phase sintering the compressed mixture to obtain a compressed and sintered product ..." This is not the claimed process.

Claim 1 reads:

1. A process comprising the steps of

mixing particles of a metal powder *with a lubricant* having a characteristic of becoming liquid under pressure and of evaporating under a sintering temperature *and at least one liquid phase former to form a mixture;*

compressing the mixture at a pressure sufficient to liquefy and uniformly distribute the lubricant within the compressed mixture with said lubricant effecting a uniform distribution of said liquid phase former on said particles of metal powder; and

sintering the compressed mixture at a sintering temperature sufficient to evaporate and drive off said lubricant and to effect a liquid phase sintering of said liquid phase former with said particles of metal powder to obtain a compressed and sintered product having a density of 99+% of theoretical density.

There is no question that Allroth does not describe a step of mixing (1) particles of a metal powder with (2) a lubricant having a characteristic of becoming liquid under pressure and of evaporating under a sintering temperature and (3) at least one liquid phase former to form a mixture. See the Examiner's Answer at page 4 wherein the Examiner states "While the term "liquid phase former" is not specifically disclosed in Allroth et al., additives and alloying elements such as graphite, phosphorous and nickel are disclosed and that in the instant application, these constituents are disclosed as "liquid phase formers" citing claim 4 and the specification, p.3, lines 4-8.

More importantly, claim 1 requires a lubricant having a characteristic of becoming liquid under pressure and of *evaporating* under a sintering temperature and requires a sintering step wherein the sintering temperature is sufficient to *evaporate and drive off said lubricant*. The Examiner's Answer cites Allroth et al.

as teaching compression of a mixture at a pressure sufficient to liquefy and uniformly distribute the lubricant with the compressed mixture (col. 5, lines 17-25). However, a reading of this paragraph in Allroth is compelling evidence that Allroth does not describe a lubricant as claimed, i.e. a lubricant that *evaporates* under a sintering temperature and one that is driven off under a sintering temperature. Simply stated, Allroth describes a lubricant that is melted by the heat generated by the described compaction operation. There is no teaching that the lubricant is evaporated and driven off during a sintering operation. Thus, Allroth does not disclose the invention substantially as claimed and it is reversible error for the Examiner to so hold in the rejection of claims 1 – 10.

Of note, there is no Finding of Fact in the Decision that the lubricant of Allroth is evaporated and driven off during a sintering operation. Thus, the Findings of Fact do not support a determination that claims 1-10 are unpatentable under 35 U.S.C. § 103.

Note that FF (2) is in error. Appellants describe synthetic graphite as a liquid phase former not graphite. (See Spec. 3 and claim 4.)

As noted in Appellants Brief, there is no teaching in Allroth that graphite is a liquid phase former. It is known that graphite particles will diffuse while in the solid state into iron particles, i.e. a solid state diffusion, during heating. However, graphite does not form a liquid phase during this solid state diffusion. Claim 1 requires "sintering the compressed mixture at a sintering temperature sufficient to evaporate and drive off said lubricant and *to effect a liquid phase sintering of said*

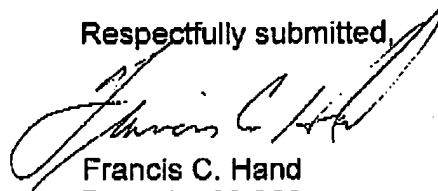
liquid phase former with said particles of metal powder..." Allroth is void of any such teaching.

The Examiner opines "since substantially the same process conditions and starting materials are used, the prior art process would *inherently* have a characteristic of liquid phase former during sintering wherein the surface and surface composition of the metal particle and the liquid phase former form a surface composition that upon further heating will liquefy forming a liquid film and provides surface tension which aids the densification process." This is not the claimed process and constitutes reversible error in the Examiner's rejection of claims 1 – 10.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

In summary, the rejection of claims 1 -10 for the reasons stated above should not be sustained.

Respectfully submitted,



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